



# **Armed Forces College of Medicine AFCM**



# **Front of leg**

**Ass. Professor Dr . Hussein  
Mohamed**

# INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

- ❑ Describe the attachments, action and nerve supply of muscles of front of leg
- ❑ Define attachment and structures passing behind extensor retinacula
- ❑ Describe root value, origin, course and branches of anterior tibial (deep peroneal) nerve
- ❑ State beginning, course and branches of anterior tibial artery

# Lecture Plan

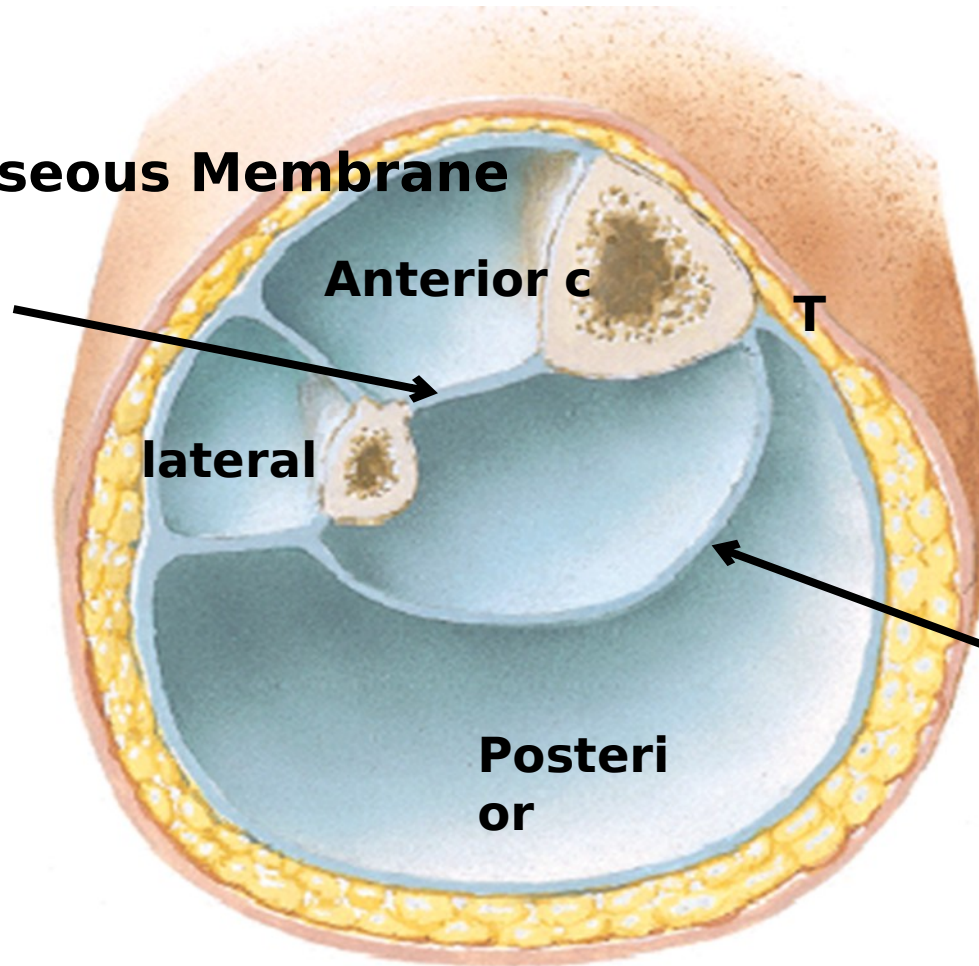


1. Part 1 : leg compartments
2. Part 2 : Tibialis anterior, extensor hallucis longus ,  
extensor digitorum , peroneous tetruis
3. Part 3 : summary of anterior compartment
4. Lecture Quiz

# Compartments of leg



Interosseous Membrane



**Leg is divided into**  
**1- anterior compartment**  
**2- lateral compartment**  
**3- posterior compartment**

**FASCIAL SEPTUM**

<https://www.google.com/search?biw=1280&bih=689&tbm=isch&sa=1&ei>

# Anterior compartment



1. **Muscles** : tibialis anterior, extensor hallucis, extensor digitorum longus , peroneus tertius muscle
2. **Nerve**: Anterior tibial nerve
3. **Vessel** :Anterior tibial vessels

# Tibialis anterior



**Origin** : from the upper 2/3 of the lateral surface of tibia

**Insertion** : into the medial cuneiform bone and the base of first metatarsal bone

Tibialis anterior



<https://www.google.com/url?sa=i&source=images&cd=&cad=rja&uact=5>

# Extensor hallucis longus



**Origin** : from the middle 2/4 of the medial surface of fibula.

**Insertion** : into the dorsum of the base of distal phalanx of the big toe.

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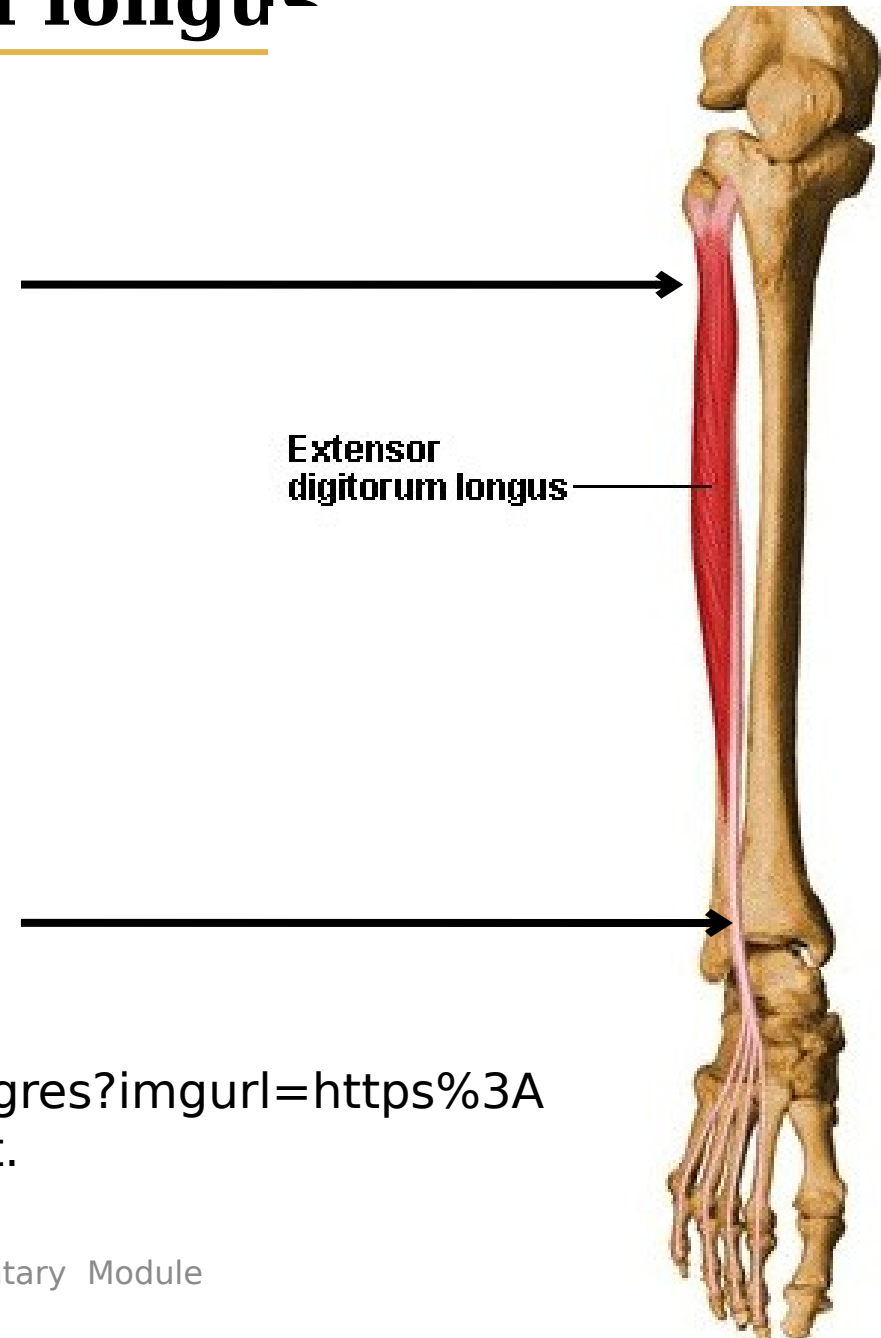
# Extensor digitorum longus



**Origin** : from the upper 3/4 of the medial surface of fibula.

**Insertion** : by four tendons one for each of the lateral 4 toes by extensor expansion.

<https://www.google.com/imgres?imgurl=https%3A%2F%2Fwww.getbodysmart>.

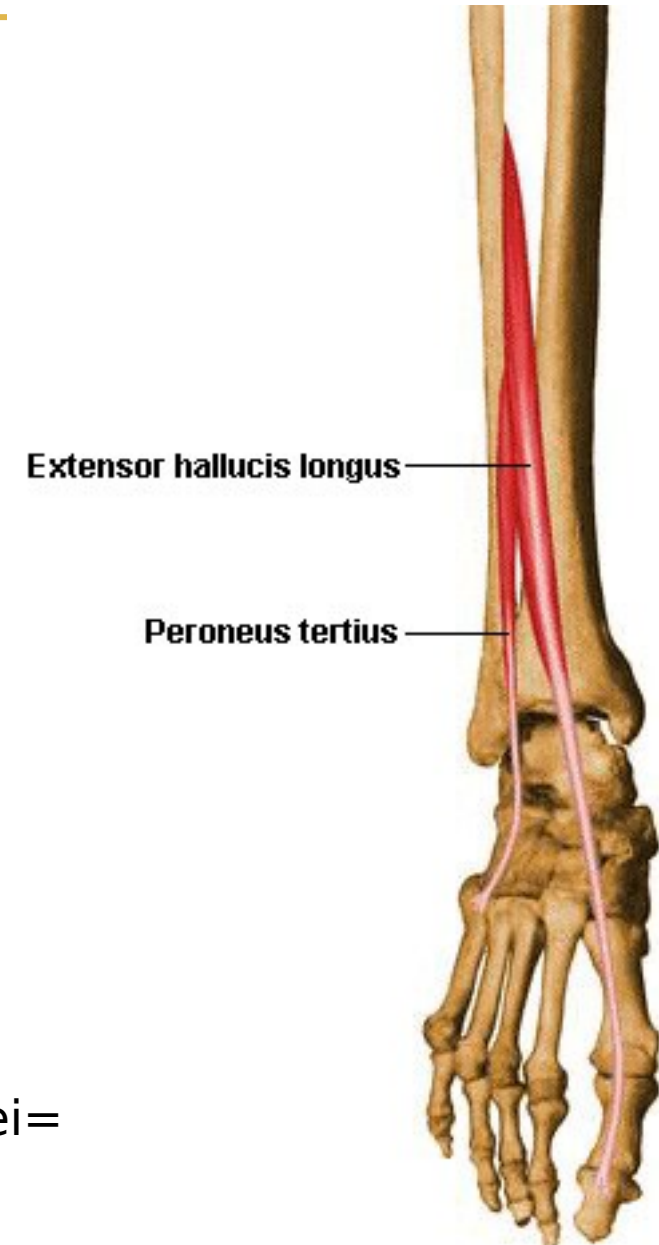


# Peroneus tertius



**Origin** : from the lower 1/4 of the medial surface of fibula .

**Insertion** : into the dorsum of the base of fifth metatarsal bone .

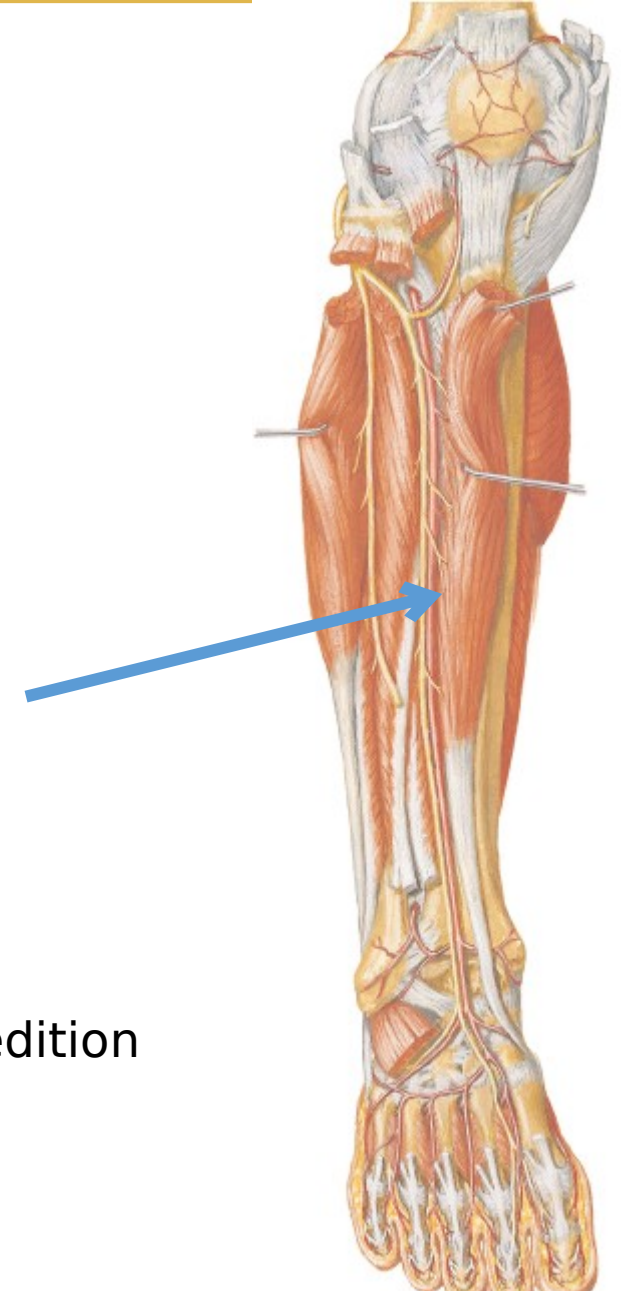


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# Nerve supply



**All muscles of anterior compartment  
are supplied by  
Anterior tibial or deep peroneal nerve**

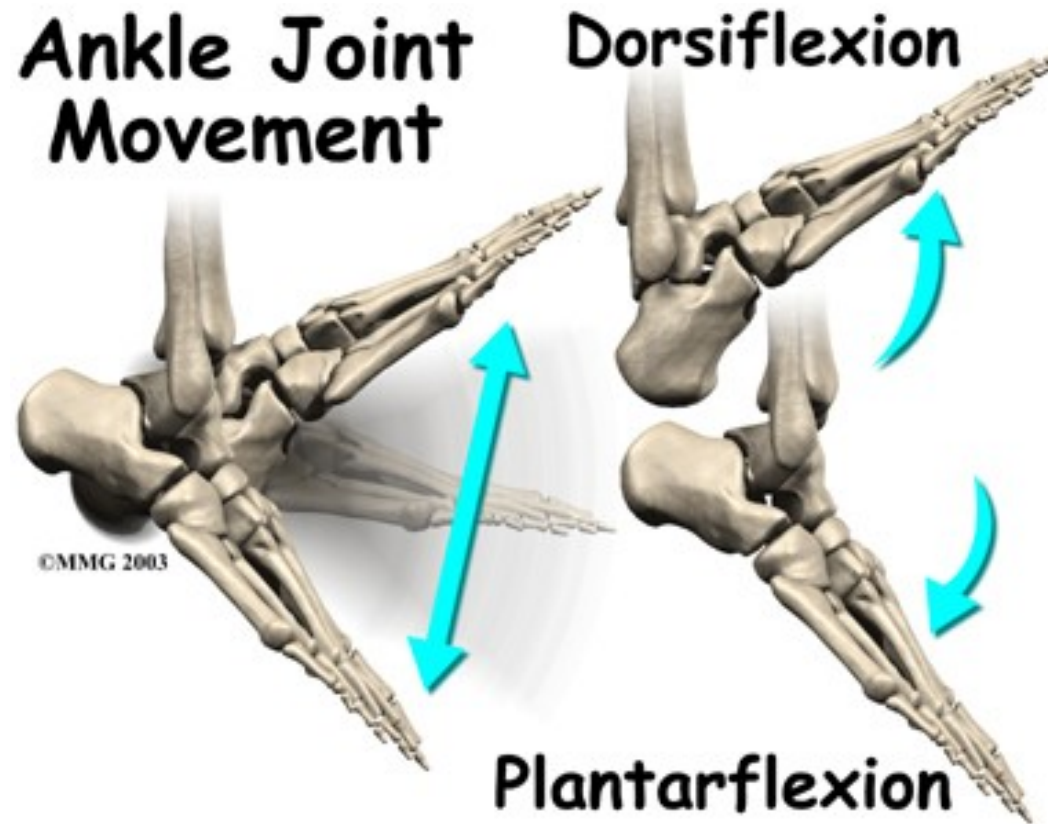


Netter 6<sup>th</sup> edition

# Action of muscles of anterior compartment



muscles of anterior compartment produce dorsiflexion



## Action of muscles of anterior compartment



### 1) *Tibialis anterior.*

important **invertor** of the foot when it is raised from the ground.

### 2) *Extensor hallucis longus:*

**extends** the metatarsophalangeal and interphalangeal joints of the big toe.

### 3) *Extensor digitorum longus:*

**extends** the metatarsophalangeal and interphalangeal joints of the lateral **4** toes.

### 4) *Peroneus tertius:*

**eversion** of the foot

# Anterior tibial nerve



-It is one of the two terminal branches of the **common peroneal nerve**.

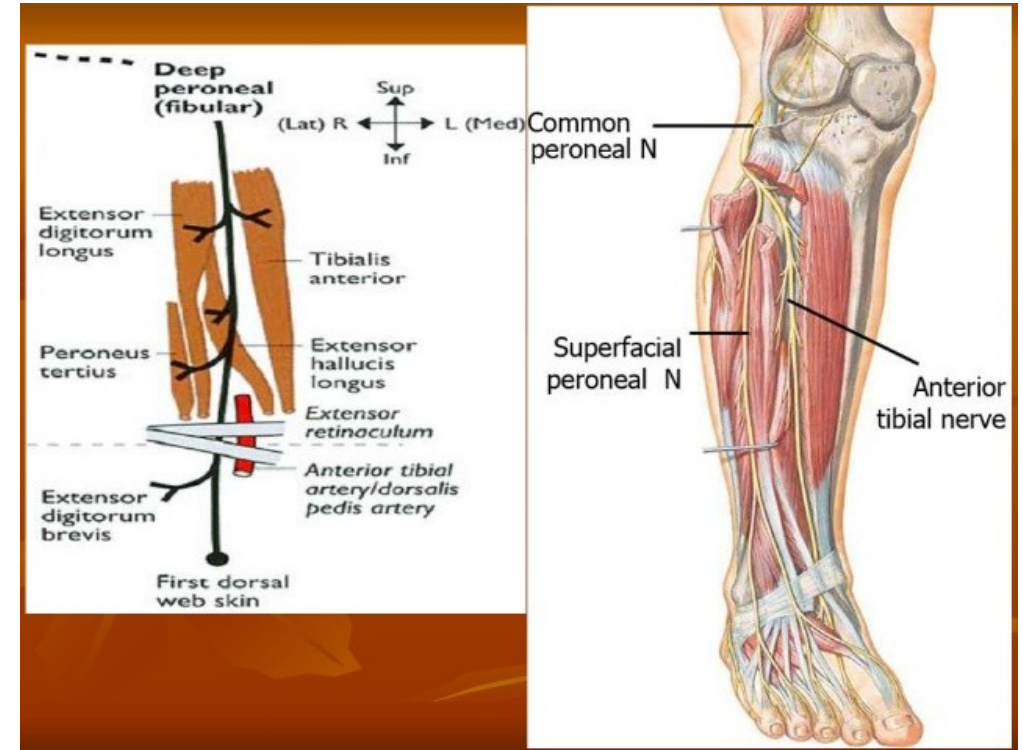
-it pierces the anterior intermuscular septum to reach anterior compartment .

-The nerve **lies lateral to the anterior tibial** vessels in the upper part of the leg then in **front** of the vessels then **lateral** to them in the lower part of the leg.

-lies under cover of the superior extensor retinaculum.

- It divides in the dorsum of the

foot into **medial and lateral**

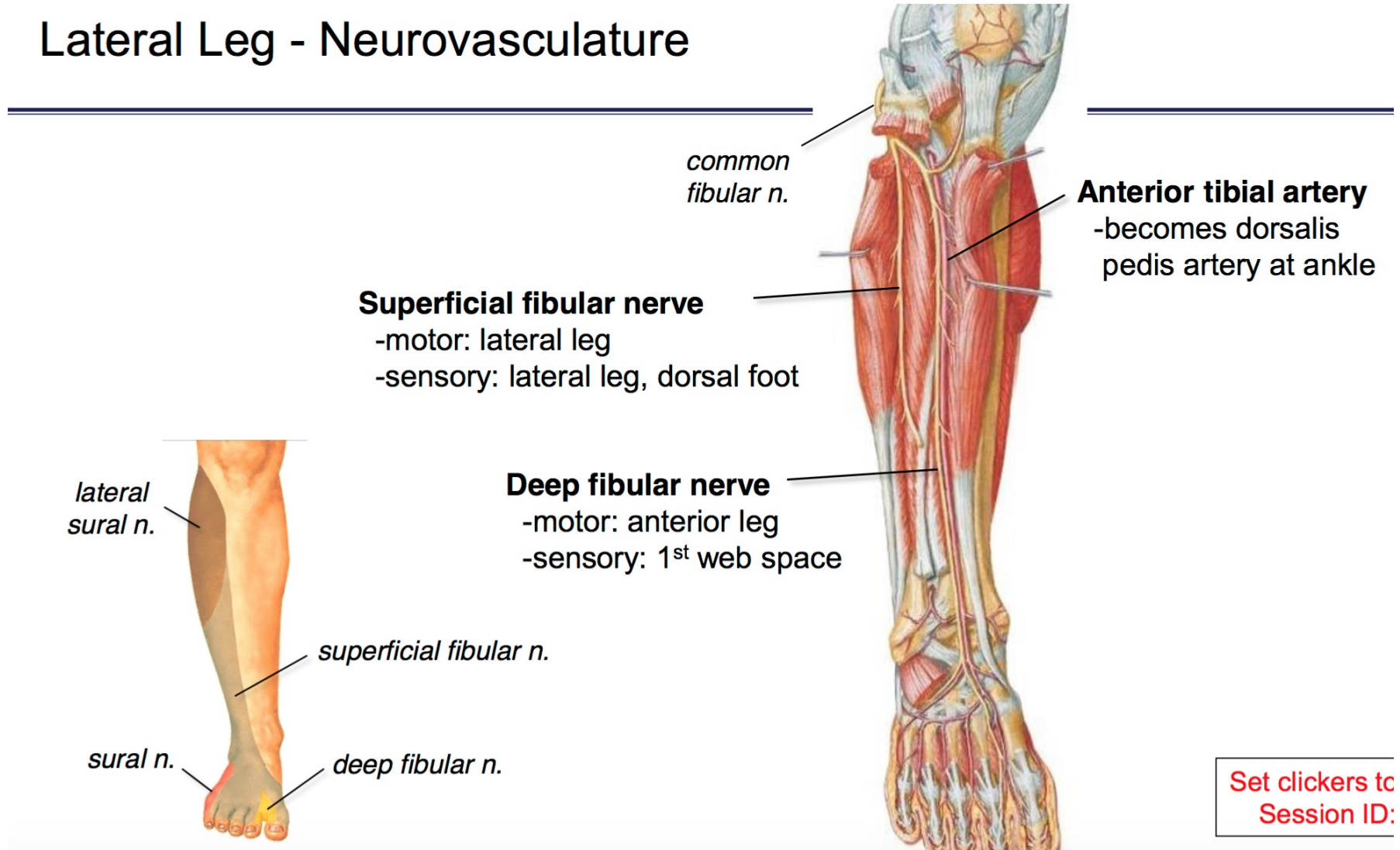




# Anterior tibial nerve



## Lateral Leg - Neurovasculature



**Anterior tibial nerve**



**Terminal branches**



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# Branches of anterior tibial nerve



**Muscular to  
all muscles  
of the  
anterior  
compartment**

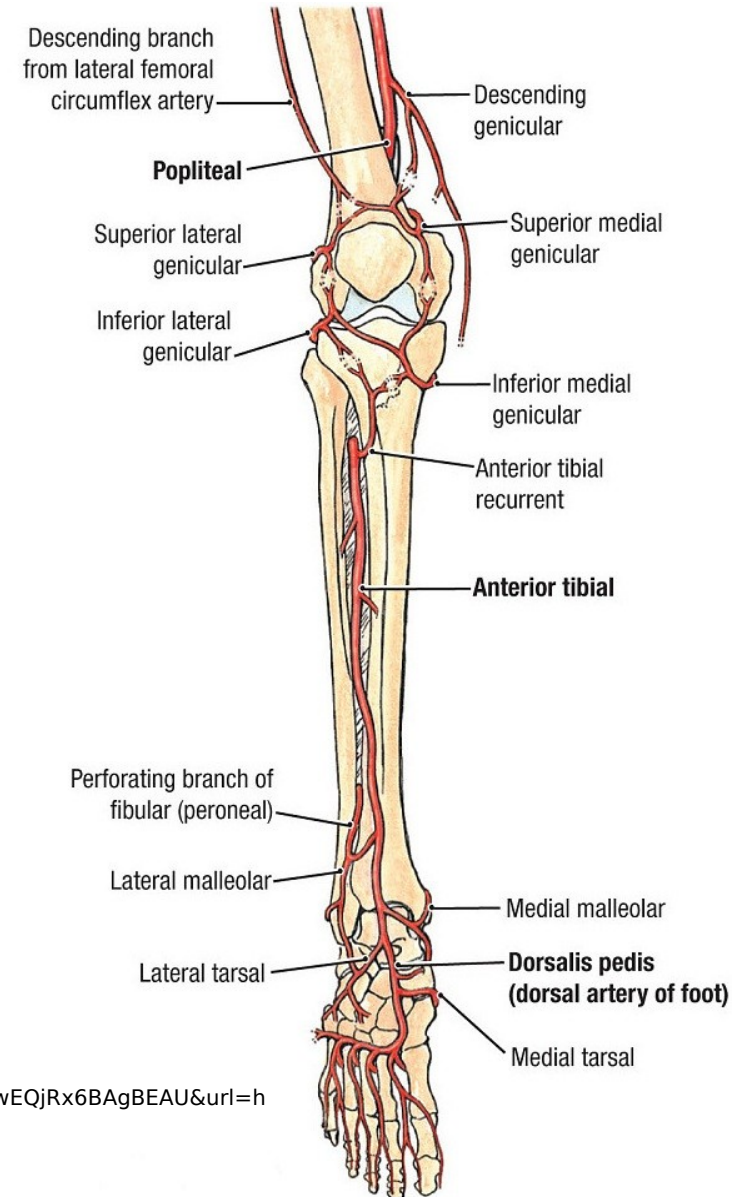
**Articular  
to the  
ankle  
joint**

**Terminal  
branches  
Medial br. To  
the skin of  
adjacent sides  
of big and  
second toe  
Lateral br. To  
**extensor  
digitorum  
brevis muscle****

# Anterior tibial artery



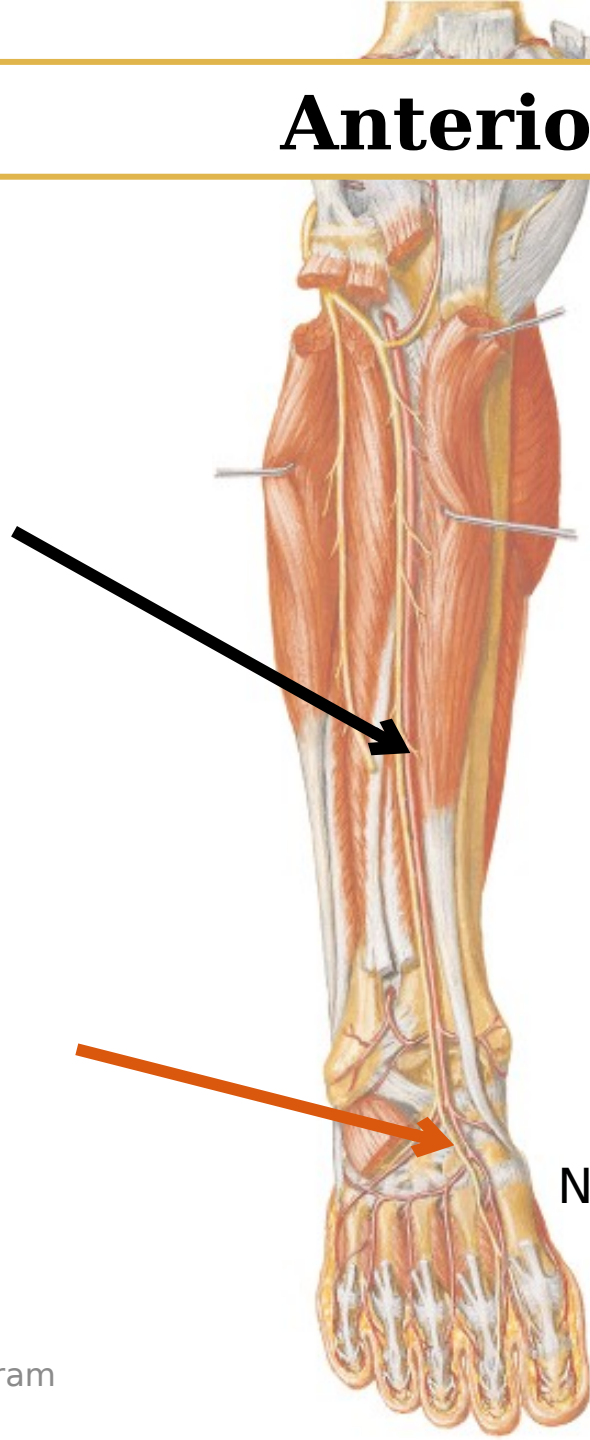
- ❑ -One of the 2 terminal brs. of the popliteal artery.
- ❑ -Begins at distal border of popliteus
- ❑ -It passes through an **opening** in the interosseous membrane to reach the anterior compartment.
- ❑ -In lower part of leg it lies between extensor hallucis longus and extensor digitorum



# Anterior Tibial Artery



It continues as **dorsalis pedis** artery by passing in front of the ankle joint between 2 malleoli .



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# Branches of Anterior Tibial Artery



## Branches

Anterior and posterior **tibial recurrent** arteries

▪ Share in anastomosis around knee

**Muscular** branches

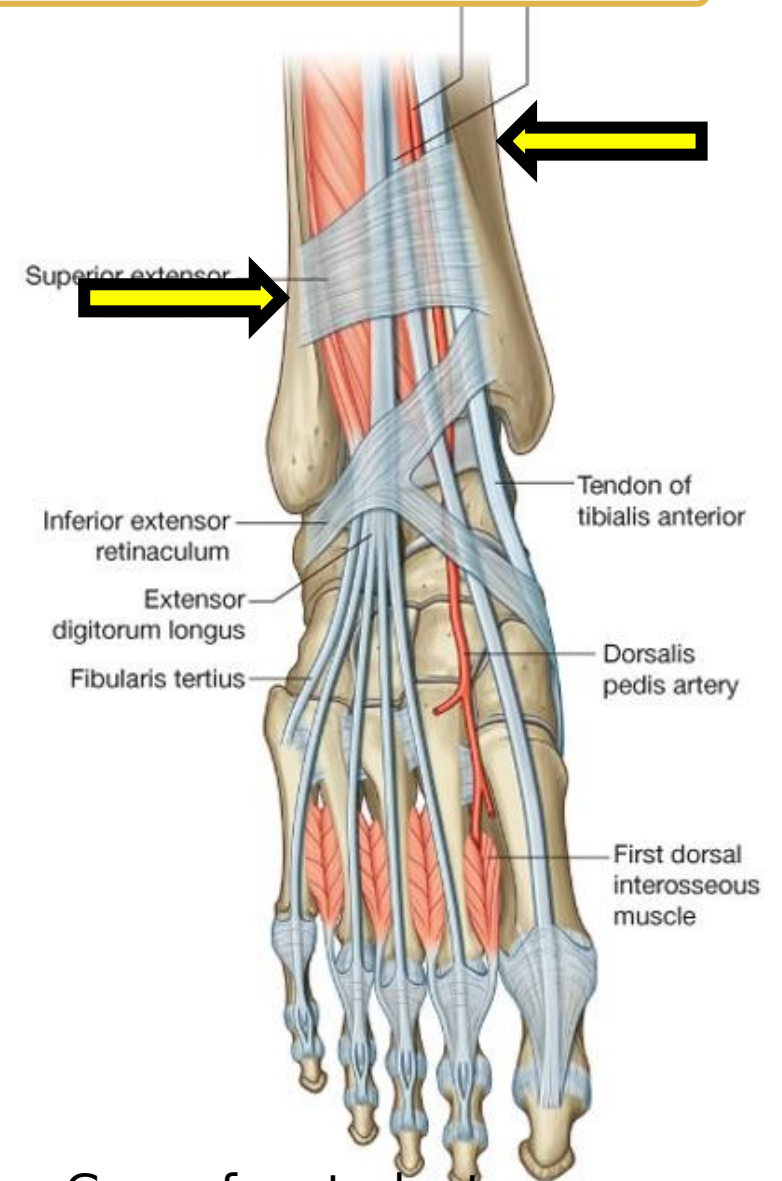
Anterior **medial** and anterior lateral **malleolar** arteries .  
Share in anastomosis around ankle

# Superior extensor retinaculum



## Superior extensor retinaculum:

- ❖ Thickened band of deep fascia extends from the **lower part** of the anterior border of **tibia** to **lower part** of the anterior border of **fibula**.



Grays for students

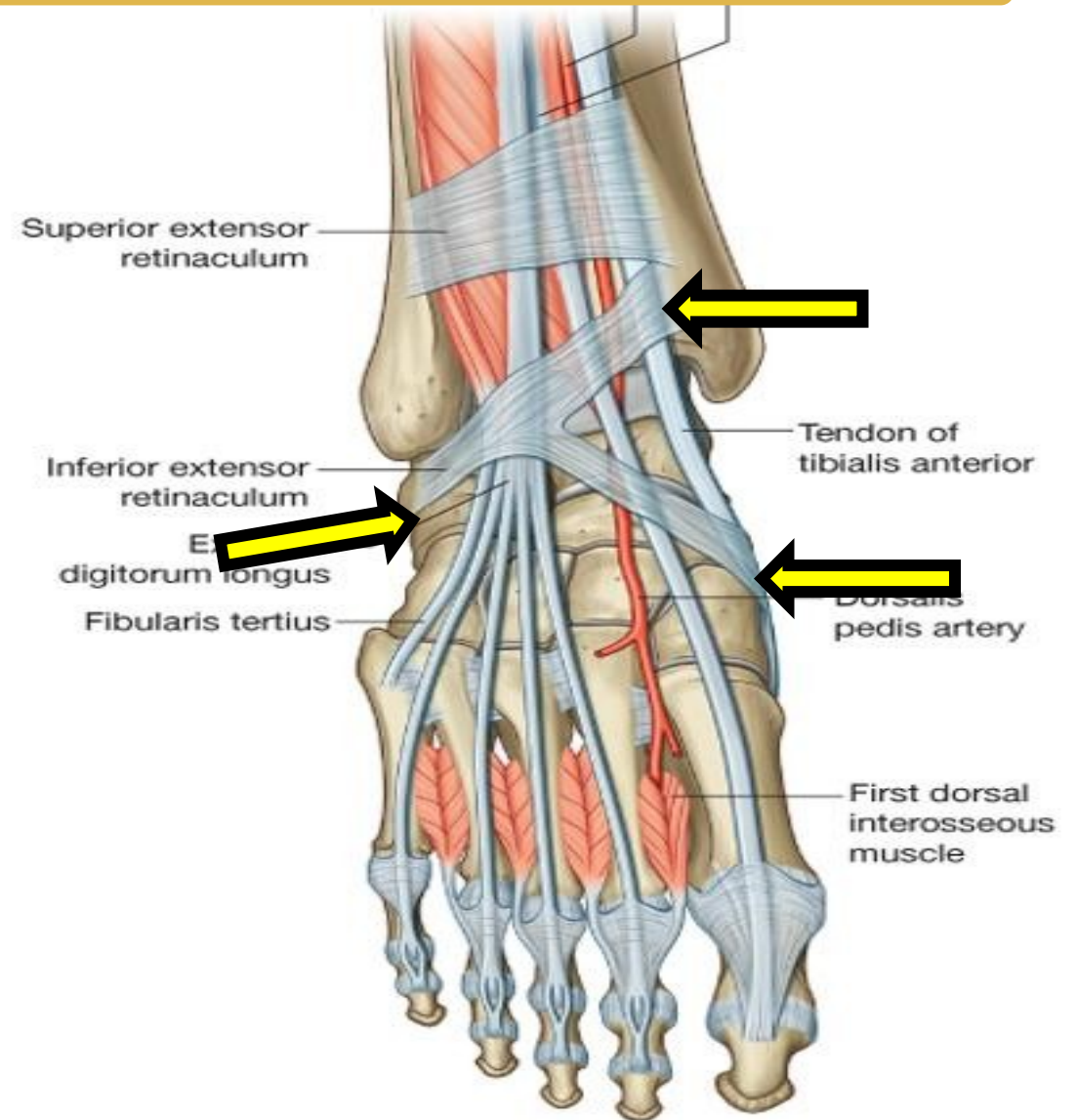
# inferior extensor retinaculum



## inferior extensor retinaculum

**Y shaped** :the stem laterally is attached to the upper surface of calcaneus

**-Medially the proximal band attached to the medial malleolus while the distal band attached to the planter**





# Structures deep to retinaculum

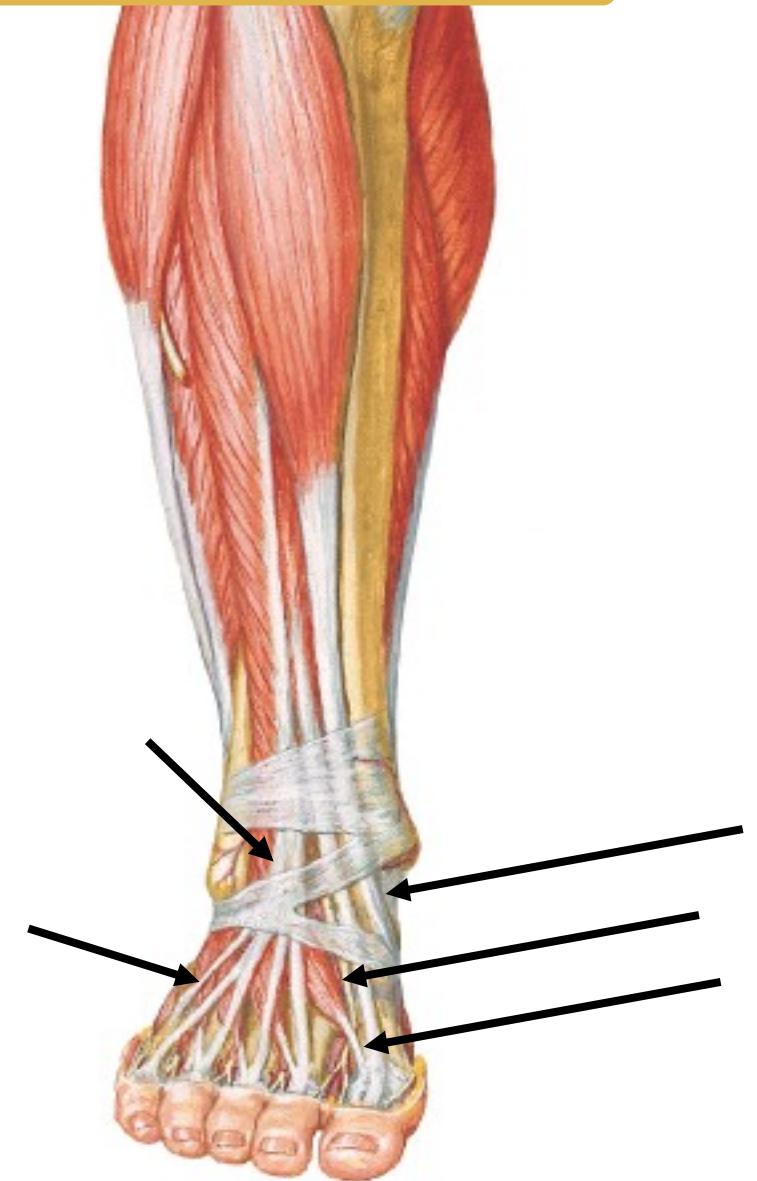


***Tom has very nice  
dogs and pigs***

- ☐ **Tibialis  
anterior**
- ☐ **Extensor  
hallucis**
- ☐ **Anterior  
tibial  
vessels**
- ☐ **Anterior  
tibial nerves**
- ☐ **Extensor  
digitorum**
- ☐ **Peroneus  
tertius**



Musculoskeletal and integumentary system



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# Lecture Quiz



Question 1 A patient lost the ability to invert his foot the lesion affected which of the following muscles

- a) Tibialis anterior                      b) Peroneus longus                      c) extensor hallucis

Question 2

Enumerate branches of anterior tibial nerve

Question 3

Enumerate structures deep to extensor retinaculum



## SUGGESTED TEXTBOOKS



1. (Regional anatomy by Richard Snell 9<sup>th</sup> edition )